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January 15, 2002

Magalie Roman Salas, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Attn: Patrick Forster, Senior Engineer - Policy Division, Wireless Telecommunications Bureau

Re: Hargray Wireless
TTY Status Report - CC Docket No. 94-102

Dear Ms. Salas:

Transmitted herewith, on behalf of Hargray Wireless, is its quarterly TTY status report for the first quarter, 2002 pursuant to the Commission's directive in the *Fourth Report and Order* (released December 14, 2000) in this docket.

Please contact the undersigned with any questions or concerns.

By: _____
John Kuykendall
Terri Granison

Kraskin, Lesse & Cosson, LLP
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Attachment

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List ABCDE

Hargray Wireless
TTY REPORT - CC DOCKET NO. 94-102
JANUARY 15, 2002

I. **Network infrastructure software development**

Hargray Wireless utilizes Lucent Technologies switch to provide CDMA digital wireless services throughout its market.

II. **Handset development and testing plans**

Hargray Wireless must rely on handset vendors to develop the required handsets. When handsets are available, testing can be performed with area PSAPs to insure compatibility.

III. **Beta testing and lab testing**

Hargray Wireless must rely on Lucent and handset vendors for initial conformance testing.

IV. **Release and general availability to carriers of network infrastructure software**

Hargray understands that Lucent is progressing with the development of the no-gain solution for CDMA and that Lucent is assisting CDMA mobile vendors with their implementations of the TTY/TDD feature. The TTY/TDD feature requires software updates in the handsets and in the infrastructure. Hargray Wireless understands that the First Office Application (FOA) was scheduled to begin for CDMA in mid-July, 2001. General Availability (GA) was scheduled to begin for CDMA thirty-days (30) or more following FOA completion. This implementation schedule is for infrastructure only. The final implementation of this feature is still dependant on handset evolution. (See attachment of Report to TTY/TDD Forum 18 submitted in June, 2001's TTY Forum Report)

V. **Availability to carriers to full acceptance test units**

Hargray Wireless is awaiting software and hardware availability from switching, infrastructure and handset vendors.

VI. **Efforts toward achieving digital wireless solution capability with enhanced TTY devices**

Hargray Wireless remains dependent upon the availability of vendor provided solutions to meet the FCC's mandated timeline to provide E911 TTY access to our networks.

VII. **Carrier coordination of testing with PSAP**

See response to item 2 above.

VIII. **Carrier testing activities, including field testing, consumer end-to-end testing, and other necessary tests**

Hargray Wireless will begin testing activities when the correct software load is installed in the switch and handsets are generally available. Hargray Wireless has requested, and is waiting on an install date for the software from Lucent Technologies.

IX. **Retail availability of necessary consumer equipment.**

It is unknown when handsets will be available.

X. **Geographic scope of network infrastructure deployment**
Savannah, GA. BTA #410

Respectfully Submitted,

Philip T. Jones
Network Operations Manager
Hargray Wireless

REPORT TO TTY/TDD FORUM 18

Lucent Technologies

12 June, 2001

Chris Fernandez - Product Management
Steve Benno - Algorithm Development
Jim Huntley - Lab Testing

TTY/TDD Standards

TTY Standards updated with latest fixes.

TR45.5/3GPP2 CDMA Standards

- IS-127-3 EVRC TTY Extension Balloted
- IS-733-2 13K TTY Extension Balloted
- SMV Contains TTY/TDD Extension.

TR45.3 TDMA Standards

- IS-823-A TTY for TDMA Balloted
- IS-840-A TTY Min Perf Spec Balloted

LAB TESTING OF TTY/TDD - TDMA

Lucent Technologies
Bell Labs Innovations

Test Categories:

1) **Baseline Testing** - unimpaired TTY transmission performance for live & streaming uplink, downlink & mobile-to-mobile calls with Power Control (DTX/DDPC) ON & OFF.
2) **HO Testing** - unimpaired TTY transmission performance for live & streaming, uplink & downlink calls with Power Control (DTX/DDPC) ON & OFF under hand-off.
3) **Impairments Testing** - TTY transmission performance for live & streaming, uplink & downlink calls with Power Control (DTX/DDPC) ON & OFF with Noise + Fading on RF link.
4) **Interoperability Testing** - unimpaired TTY transmission performance for live & streaming, uplink & downlink calls with Power Control (DTX/DDPC) ON & OFF with TTY OFF at mobile.
5) **False Alarm Testing** - unimpaired and impaired TTY transmission performance for streaming uplink & downlink calls with Power Control (DTX/DDPC) ON.

Test Results: **(Ultratec Compact TTY - Ameriphone Q90)**

1) Downlink CER ~ 0%; Uplink CER ~ 0-1+%; Streaming CER → 0%; Live CER → 1%; **There are still known Uplink problems with the TTY mobiles**.
2) Downlink better than Uplink (75 vs.125 ms mute times); HO CERs a little worse than expected; TTY mode errors may occur.
3) Faded CERs ~ same as Baseline Tests. Fading + Noise CER Uplink ~0-1% at C/I = 12 dB; Fading + Noise Downlink CERs vs. C/I depends on Power Control (DDPC).
4) TTY transmission is as expected on both links when TTY is OFF at the mobile, CER ≥ 3%.
5) No False Alarms found in > 30 hours of testing.
6) TTY terminals displayed some errors and variability in live testing.

LAB TESTING OF TTY/TDD - CDMA

Lucent Technologies
Bell Labs Innovations

Test Categories:

1) **Baseline Testing** - unimpaired TTY transmission performance for live & streaming uplink, downlink & mobile-to-mobile calls for both EVRC & 13K vocoders.
2) **HO Testing** - unimpaired TTY transmission performance for live & streaming, uplink, downlink & mobile-to-mobile calls for both EVRC & 13K vocoders under hand-off.
3) **Impairments Testing** - TTY transmission performance for live & streaming, uplink & downlink calls for both EVRC & 13K vocoders with Noise on RF link.
4) **TTY Interoperability Testing** - unimpaired TTY transmission performance for live & streaming, uplink & downlink calls for both EVRC & 13K vocoders with TTY OFF at mobile.
5) **False Alarm Testing** - unimpaired and impaired TTY transmission performance for streaming uplink & downlink calls for both EVRC & 13K vocoders.

Test Results: **(Ultratec Compact TTY - Ameriphone Q90)**

1) Downlink CER ~ 0%; Uplink CER ~ 0%; Streaming CER → 0%; Live CER → 0%;
2) Downlink CER ~ 0%; Uplink CER ~ 0%; Streaming CER → 0%; Live CER → 0%;
3) CERs with Noise same as for Baseline Tests up to FER ~ 30% on Uplink & ~ 20% on Downlink.
4) TTY transmission is as expected on both links when TTY is OFF at the mobile, CER is high.
5) No False Alarms found in ~ 60 hours of testing.
6) TTY terminals displayed some errors and variability in live testing.

TTY/TDD FOA - TDMA

Lucent Technologies
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Limited FOA (First Office Application) testing was done at 1900 MHz band frequencies only (TDMA) during May 2001.

Tests:

- Mobile to Landline Originations
- Landline to Mobile Terminations
- Mobile to Mobile Originations & Terminations
- Stationary & Drive Tests (including HOs)

Results:

- Uplink and downlink streaming tests passed for messages sent from the TTY/TDD terminal with no character errors.
- Downlink live tests passed for messages manually typed at the TTY/TDD terminal per the test plan with no character errors (error rate less than 1 in 1000 characters).
- Uplink errors were encountered when typing manually for the first one or two characters at the beginning of manual typing.
- HO errors were typically 2-3 characters; 1 TTY mode change.

TTY/TDD FOA - CDMA

Lucent Technologies
Bell Labs Innovations

FOA (First Office Application) testing planned for .....

***Tests*: (EVRC and 13K)**

- Mobile to Landline Originations
- Landline to Mobile Terminations
- Mobile to Mobile Originations & Terminations
- Stationary and Drive Testing
- Voice Quality
- TTY Interoperability
- E-911

***Results*:**

- Summary results of the tests will be provided to forum.

TTY/TDD Schedule & Milestones

Lucent Technologies
Bell Labs Innovations

TDMA Infrastructure:

- Limited FOA - late May, 2001
- Controlled Introduction - late June, 2001
- General Availability - August, 2001

CDMA Infrastructure:

- Ready for FOA - mid July, 2001
- General Availability - ≥ 30 days after FOA (customer permitting)

GSM Infrastructure:

- Delivery to AWS Labs - 31 October, 2001

TTY/TDD Mobiles:

- End-to-End VQ Lab Testing - In Progress
- Transition to Interoperabilty Lab - ~ August, 2001